

## WHAT IS CLAIMED IS:

1. An assay of determining an effect of Glutamate or a Glutamate analog on a T cell related disease or condition, the assay comprising:
  - exposing an organism having the T cell related disease or condition to at least one concentration of Glutamate or the Glutamate analog; and
  - assessing at least one T cell related symptom in said organism.
2. The assay of claim 1, wherein said Glutamate analog is selected from the group consisting of naturally occurring and synthetic analogs.
3. The assay of claim 1, wherein said Glutamate analog is a downregulator of T cell activation.
4. The assay of claim 1, wherein said Glutamate analog is an upregulator of T cell activation.
5. A method of modulating T cell activity, the method comprising exposing T cells to Glutamate or a T cell activity modulating Glutamate analog.
6. The method of claim 5, wherein exposing said T cells to said Glutamate or said T cell activity modulating Glutamate analog is performed in vitro.
7. The method of claim 5, wherein exposing said T cells to said Glutamate or said T cell activity modulating Glutamate analog is performed in vivo.

8. The method of claim 5, wherein said T cell activity modulating Glutamate analog is an upregulator, causing increased T cell activity.

9. The method of claim 5, wherein said Glutamate analog is selected from the group consisting of naturally occurring and synthetic analogs.

10. The method of claim 5, wherein said T cell activity modulating Glutamate analog is a downregulator, causing decreased T cell activity.

11. The method of claim 5, wherein said downregulator is a Glutamate receptor blocker.

12. A method of upregulating T cell activity in a mammalian subject, the method comprising administering to the subject a therapeutically effective amount of Glutamate or a T cell upregulating Glutamate analog, said amount being sufficient to upregulate T cell activity, thereby upregulating said T cell activity in the mammalian subject.

13. The method of claim 12, wherein said upregulating Glutamate analog is selected from the group consisting of naturally occurring and synthetic analogs.

14. The method of claim 12, wherein administering said therapeutically effective amount of Glutamate or a T-cell upregulating Glutamate analog is performed ex vivo.

15. The method of claim 12, wherein administering said therapeutically effective amount of Glutamate or a T-cell upregulating Glutamate analog is performed in vivo.

16. The method of claim 12, wherein said subject is suffering from a T cell related disease or condition selected from the group consisting of congenital immune deficiencies, acquired immune deficiencies, infection, neurological disease and injury, psychopathology and neoplastic disease.